

SOLAR OBSERVATIONS.

SOLAR AND SKY RADIATION MEASUREMENTS DURING FEBRUARY, 1923.

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For a description of instruments and exposures, and an account of the method of obtaining and reducing the measurements, the reader is referred to this REVIEW for April, 1920, 48:225, and a note in the REVIEW for November, 1922, 50:595.

From Table 1 it is seen that direct solar radiation intensities averaged below the normal values for February at Washington, and close to normal at Madison and Lincoln.

Table 2 shows that the total solar and sky radiation received on a horizontal surface averaged above the February normal at Madison and Lincoln, and at Washington during the last two weeks of the month. There was a decided deficiency at Washington during the first two weeks, however.

Skylight-polarization measurements obtained at Washington on five days give a mean of 63 per cent, with a maximum of 70 per cent on the 14th. These are above the average values for Washington for February. At Madison the ground was covered with snow throughout the month, and no measurements were obtained.

TABLE 1.—Solar radiation intensities during February, 1923.

[Gram-calories per minute per square centimeter of normal surface.]

Washington, D. C.

Date.	Sun's zenith distance.											Local mean solar time.	
	8a.m.	78.7°	75.7°	70.7°	60.0°	0.0°	60.0°	70.7°	75.7°	78.7°	Noon.		
	75th mer. time.	Air mass.											
		A. M.						P. M.					
		e.	5.0	4.0	3.0	2.0	*1.0	2.0	3.0	4.0	5.0		e.
Feb. 7.....	mm.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	mm.		
8.....	2.06				0.67						2.26		
12.....	3.45						1.01	0.80	0.66		3.81		
14.....	2.87	0.51	0.65	0.82	1.07						2.74		
16.....	5.56	0.90	1.00	1.15	1.36	1.64	1.35	1.13	0.97	0.88	1.19		
18.....	1.07	0.40	0.59	0.73	0.90		1.17	0.85	0.70	0.60	0.86		
19.....	0.86			0.94	1.27						0.96		
23.....	1.32	0.71	0.84	0.99	1.22	1.56	1.22				1.12		
24.....	1.60		0.56	0.77	0.94						1.45		
Means.....	1.12	0.63	0.73	0.90	1.06		1.18	0.94	0.74	(0.74)	1.07		
Departures.....		-0.13	-0.10	-0.10	-0.12		-0.02	-0.07	-0.06	-0.02			

* Extrapolated.

TABLE 1.—Solar radiation intensities during February, 1923—Continued.

Madison, Wis.

Date.	Sun's zenith distance.											Local mean solar time.
	Sa.m.	78.7°	75.7°	70.7°	60.0°	0.0°	60.0°	70.7°	75.7°	78.7°	Noon.	
	75th mer. time.	Air mass.										
		A. M.					P. M.					
e.	5.0	4.0	3.0	2.0	*1.0	2.0	3.0	4.0	5.0	e.		
Feb. 3.....	mm.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	mm.		
7.....	0.28	1.06	1.14	1.30	1.49	1.70	.....	1.06	.....	0.23	
8.....	2.16	.....	.....	.....	.....	.....	.....	.....	.....	2.16	
16.....	2.49	0.97	1.08	.....	.....	.....	.....	.....	.....	1.96	
23.....	0.71	0.93	1.04	.....	.....	.....	.....	.....	.....	0.81	
27.....	0.71	.....	1.14	1.28	.....	.....	.....	.....	.....	0.96	
Means.....	3.30	.....	.....	.....	.....	.....	1.18	.....	.....	3.63	
Departures.....	.....	0.99	1.10	(1.29)	(1.49)	.....	(1.18)	(1.06)	.....	.....
		+0.05	-0.03	+0.05	+0.11	.....	-0.20	-0.13	.....	.....
Lincoln, Nebr.												
Feb. 3.....	0.63	.....	.....	1.32	1.46	1.65	1.46	1.29	1.14	1.01	0.53
5.....	0.86	.....	.....	.....	1.30	.....	.....	1.14	0.91	0.86	2.28
7.....	1.24	1.00	1.06	1.30	1.39	.....	.....	.....	.....	.....	2.62
13.....	1.83	.....	.....	1.16	1.34	.....	1.34	1.12	0.89	0.73	1.19
15.....	0.79	.....	0.83	1.07	.....	.....	.....	.....	.....	.....	0.86
16.....	0.91	1.03	1.08	1.31	1.47	1.65	1.45	1.24	1.08	0.96	0.96	
17.....	1.37	.....	.....	1.20	1.37	.....	1.40	1.26	1.14	1.00	1.32
24.....	5.56	.....	.....	.....	1.29	.....	1.30	0.97	.....	.....	5.16
27.....	2.87	.....	.....	.....	1.41	.....	.....	.....	.....	.....	2.49
Means.....	.....	(1.02)	1.00	1.23	1.38	.....	1.39	1.17	1.03	0.91	.....
Departures.....	.....	+0.04	-0.06	+0.01	-0.02	.....	+0.03	-0.02	-0.01	-0.01	.....

Lincoln, Nebr.

Feb. 3.....	0.63	.....	.....	1.32	1.46	1.65	1.46	1.29	1.14	1.01	0.53
5.....	0.66	.....	.....	.....	1.30	.....	.....	1.14	0.91	0.86	2.26
7.....	1.24	1.00	1.09	1.30	1.39	.....	.....	.....	.....	.....	2.62
13.....	1.88	.....	.....	1.16	1.34	.....	1.34	1.12	0.89	0.73	1.19
15.....	0.79	.....	0.83	1.07	.....	.....	.....	.....	.....	.....	0.86
16.....	0.91	1.03	1.08	1.31	1.47	1.65	1.45	1.24	1.08	0.96	0.96
17.....	1.37	.....	.....	1.20	1.37	.....	1.40	1.26	1.14	1.00	1.32
24.....	5.56	.....	.....	.....	1.29	.....	1.30	0.97	.....	.....	5.16
27.....	2.87	.....	.....	.....	1.41	.....	.....	.....	.....	.....	2.49
Means.....	.....	(1.02)	1.00	1.23	1.38	.....	1.39	1.17	1.03	0.91	.....
Departures.....	.....	+0.04	-0.06	+0.01	-0.02	.....	+0.03	-0.02	-0.01	-0.01	.....

* Extrapolated.

TABLE 2.—Solar and sky radiation received on a horizontal surface.

Week beginning.	Average daily radiation.			Average daily departure for the week.			Excess or deficiency since first of year.		
	Washington.	Madison.	Lincoln.	Washington.	Madison.	Lincoln.	Washington.	Madison.	Lincoln.
Jan. 29.....	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.	cal.
Feb. 5.....	168	204	221	-54	-16	-48	-2,316	-1,138	-911
12.....	282	242	378	+39	+1	+81	-2,042	-1,131	-342
19.....	269	282	332	+5	+20	+8	-2,004	-990	-283